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EXAMINER	
CUTLER, ALBERT H	

ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/664,508	KADOHARA, TERUTAKE	
	Examiner	Art Unit	
	ALBERT H. CUTLER	2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 April 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

1. This office action is responsive to communication filed on April 15, 2010. Claims 1-10 are pending in the application and have been examined by the Examiner.

Continued Examination Under 37 CFR 1.114

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on April 15, 2010 has been entered.

Response to Arguments

3. Applicant argues, with respect to claims 1 and 6, that there is no teaching in TeWinkle of reading out pixel signals from two different light receiving areas, i.e. different chips, of the image sensor bar via a same channel. Instead, in TeWinkle, the pixel signals are read out from each light receiving area via a separate channel, i.e. VO line, and the shift registers are controlled so that the pixel signals from the channels associated with the light receiving areas are read out in series to output an image signal into a common output line.

4. The Examiner respectfully disagrees. TeWinkle teaches that the subset of chips (12, figure 7) “are configured to output video data in a single serial stream” (column 4, lines 66-67). Further, TeWinkle teaches that the subset of chips "output onto a common output line" so that the subset of chips “in effect acts as one large chip with a single shift

register" (column 5, lines 4-12). The Examiner interprets the "common output line" to be the claimed "same channel". As two different chips (i.e. light receiving areas) output onto a common output line, the two chips output image signals via the same channel. Claims 1 and 6, as currently written, do not require the specific configuration of Applicant's invention.

5. Applicant's other arguments with respect to claims 1-10 have been considered but are moot in view of the new ground(s) of rejection.

Claim Objections

6. Claim 1 is objected to because of the following informalities: Lack of clarity and precision.

7. Claim 1 recites "**the** plurality of divisional exposure operations". However, no plurality of divisional exposure operations has been previously defined. Claim 1 should be amended to recite "**a** plurality of divisional exposure operations", or something of similar nature. Appropriate correction is required.

Claim Rejections - 35 USC § 103

8. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

9. Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over TeWinkle (US 7,164,506) in view of Lin et al. (US 6,069,973) and Okisu et al. (US 6,571,022).

10. The Examiner's response to Applicant's arguments, as outlined above, is hereby incorporated into the rejections of claims 1, 2 and 5-8 by reference.

Consider claim 1, TeWinkle teaches:

An image sensing apparatus (figure 7) comprising:

an image sensing element ("image sensor array chips", 12) manufactured by a plurality of divisional exposure operations such that the image sensing element includes a first light receiving area ("I", figure 7) and a second light receiving area ("II", figure 7) which are formed on an image pickup surface of a semiconductor substrate (substrate, 14, figure 1) by the plurality of divisional exposure operations (A plurality of "sensor array chips" (12, i.e. chips manufactured by a plurality of divisional exposures) are butted end to end to form a single array of photosensors on the substrate (14), column 2, line 64 through column 3, line 4.), wherein pixel signals obtained by the first light receiving area and the second light receiving area are read out from the image sensing element via a same channel (All of the chips (I, II, etc.) are connected in serial such that they are all output onto a "common output line" such that the set of chips "in effect acts as one large chip with a single shift register", column 4, line 62 through column 5, line 12, figure 7.),

wherein an image signal of once frame is formed from image signal which is output from a plurality of light receiving areas including the first light receiving area and the second light receiving area (The invention of TeWinkle is related to "scanning arrays in which a set of photosensors are arranged in a linear array, such as for scanning of

hard copy images for conversion to digital data" (column 1, lines 8-13). The Examiner interprets the obtained digital image to be a claimed "image signal of one frame". TeWinkle teaches that when an image is being scanned "video signals are output from **each chip** at a very high rate as the original hard-copy image moves past the linear array of photosensors on the chip" (column 1, lines 44-47). As video signals are output from "each chip", it is clear that the obtained frame image is formed from an image signal which is output from a plurality of light receiving areas including the first light receiving area and the second light receiving area.).

However, TeWinkle does not explicitly teach of a correction device which corrects difference between output levels of pixel signals output from the first light receiving area and the second light receiving area via the same channel.

Lin et al. similarly teaches a multi-chip image sensor (1, figure 2, column 3, lines 61-64).

However, in addition to the teachings of TeWinkle, Lin et al. teaches a correction device which corrects difference between output levels of pixel signals output from first and second light receiving areas (The data processor (2, figures 1 and 2) provides image signal correction, column 3, lines 31-34. The image signal correction includes chip-to-chip correction (i.e. correction between output levels of respective light receiving areas) wherein the chips are corrected to output uniform image signals, as detailed in column 5, lines 8-16, step 200 of figure 3.

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to include a correction device as taught by Lin et al. for

correcting difference between output levels of pixel signals output from the first light receiving area and the second light receiving area via the same channel as taught by TeWinkle for the benefit of outputting image signals that are an accurate representation of a scanned document of image (Lin et al., column 4, lines 56-64).

However, the combination of TeWinkle and Lin does not explicitly teach a control device which controls to write signals corrected by said correction device to a frame memory.

Okisu et al. similarly teaches an image sensing apparatus (camera, figures 2 and 8) comprising an image sensing element having a first light receiving area (CCD, 12) and a second light receiving area (CCD, 13, See figures 2 and 8, column 6, lines 16-27. Two color image pickup devices (12 and 13) are situated behind the lens (2) to capture left and right partial images.), and a correction device which corrects a pixel signal output from said image sensing element (See figures 8 and 9. The image sensing element (12, 13) outputs signals to an image processor (19). The image processor (see figure 9) contains a shading corrector (194, i.e. a correction device), column 7, lines 61-67. The shading corrector (194) corrects output levels of pixels of the image sensing element (12, 13), column 8, lines 19-22.).

However, Okisu et al. further teaches a control device (card drive controller, 20, figure 8) which controls to write signals corrected by said correction device to a frame memory (Synthesized image data is written to an HD card (10, i.e. frame memory) by the card controller (20), column 7, lines 22-42.).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to include a control device which controls to write signals corrected by said correction device to a frame memory as taught by Okisu et al. in the image sensing apparatus taught by the combination of TeWinkle and Lin et al. for the benefit of enabling future retrieval and viewing of the image data.

Consider claim 2, and as applied to claim 1 above, TeWinkle does not explicitly teach a correction device.

Lin et al. further teaches that said correction device divides the light receiving area into a plurality of blocks, and performs correction using a different correction value for each block (pixel-by-pixel (i.e. block-by-block) correction is performed as detailed in step 100 of figure 3, column 4, line 67 through column 5, line 7.).

Consider claim 3, and as applied to claim 1 above, TeWinkle further teaches that the light receiving areas include at least three partial image sensing regions in one direction (see I, II, etc., figure 7). Lin et al. teaches that different correction values are used for individual linear arrays (see claim 1 rationale). However, the combination of TeWinkle and Lin et al. does not explicitly teach that said correction device corrects at least two of the three partial image sensing regions with correction values by using as a reference a central partial image sensing region selected from the three partial image sensing regions.

However, Okisu et al. further teaches:

The light receiving areas (12, 13) include at least three partial image sensing regions in one direction, and said correction device corrects at least two of the three partial image sensing regions with correction values by using as a reference a central partial image sensing region selected from the three partial image sensing regions (Okisu et al. teaches that three or more image pickup regions (i.e. light receiving areas) can be used, column 23, line 64 through column 24, line 2. Okisu et al. further teaches normalizing the pixel values to the center of a light receiving surface (i.e. a central partial image sensing region), column 9, lines 50-55.).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to use the central image sensing region taught by the combination of TeWinkle and Lin et al. as a reference as taught by Okisu et al. to obtain predictable results while applying a known technique to a known device.

Consider claim 4, and as applied to claim 1 above, TeWinkle does not explicitly teach a correction device. Lin et al. further teaches that said correction device performs correction using different correction values in a boundary direction between light receiving elements (Pixel-by-pixel (i.e. block-by-block) correction is performed as detailed in step 100 of figure 3, column 4, line 67 through column 5, line 7. This includes any pixels in a boundary direction.)

Consider claim 5, and as applied to claim 1 above, TeWinkle does not explicitly teach a correction device. Lin et al. further teaches that said correction device performs

correction using a different correction value for each color (Non-uniformity due to the different color filters is corrected for, as detailed in column 5, lines 8-16).

Claim 6 recites an image sensing apparatus similar to the image sensing apparatus recited in claim 1, and matching features are rejected using the same rationale (see claim 1 above).

TeWinkle additionally teaches that color filters of a plurality of colors are formed on the first and second light receiving areas (A "full-color version" typically has three parallel linear arrays of photosensors, each array being sensitive, such as by the inclusion of a color filter layer, to one primary color, column 3, lines 34-42.). Lin et al. also teaches that each chip has color filters formed over each imaging element (column 4, lines 31-33).

Consider claim 7, and as applied to claim 6 above, TeWinkle additionally teaches that the image sensing element outputs a signal from a different output unit for each light receiving area (A different output (SROUT) is provided for each light receiving area (I, II, etc.) of the image sensing element, figure 7, column 5, lines 4-12.). TeWinkle does not explicitly teach performing correction. Lin et al. teaches that a different correction value is used for each linear array and thus each output unit (see claims 1 and 6 rationale).

Consider claim 8, and as applied to claim 6 above, TeWinkle does not explicitly teach a correction device. Lin et al. further teaches that said correction device performs correction using a different correction value for each lens (Correct values are determined based upon received illumination, which is a factor of the lens used, column 4, lines 56-64.). Okisu et al. teaches the use of a lens (2, figure 8).

Consider claim 9, and as applied to claim 6 above, the combination of TeWinkle and Lin et al. does not explicitly teach that correction is performed using a different correction value for each exit pupil position of an optical system.

Okisu et al. further teaches that correction is performed using a different correction value for each exit pupil position of an optical system (Different correction values are used for each pixel, column 9, lines 55-58. Each pixel has a separate lens which has a different optical characteristic, which different optical characteristic would cause different exit pupil positions. See figures 11-13, column 8, lines 47-58.).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to have the correction device taught by the combination of TeWinkle and Lin et al. use different correction values for different exit pupil positions as taught by Okisu et al. to obtain predictable results while applying a known technique to a known device.

Consider claim 10, and as applied to claim 6 above, the combination of TeWinkle and Lin et al. does not explicitly teach that correction is performed using a different correction value for each F-number.

Okisu et al. further teaches that correction is performed using a different correction value for each F-number (Different correction values are used for each pixel, column 9, lines 55-58. Each pixel has a separate lens which has a different optical characteristic, which different optical characteristic would cause each lens to have a different F-number. See figures 11-13, column 8, lines 47-58.).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to have the correction device taught by the combination of TeWinkle and Lin et al. use different correction values for F-numbers as taught by Okisu et al. to obtain predictable results while applying a known technique to a known device.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALBERT H. CUTLER whose telephone number is (571)270-1460. The examiner can normally be reached on Mon-Thu (9:00-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh Tran can be reached on (571) 272-7564. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Sinh Tran/
Supervisory Patent Examiner, Art Unit 2622

AC